

ABSTRACT

A micropyrolyzer has applications to pyrolysis, heated chemistry, and thermal desorption from liquid or solid samples. The micropyrolyzer can be fabricated from semiconductor materials and metals using standard integrated circuit technologies. The micropyrolyzer enables very small volume samples of less than 3 microliters and high sample heating rates of greater than 20°C per millisecond. A portable analyzer for the field analysis of liquid and solid samples can be realized when the micropyrolyzer is combined with a chemical preconcentrator, chemical separator, and chemical detector. Such a portable analyzer can be used in a variety of government and industrial applications, such as non-proliferation monitoring, chemical and biological warfare detection, industrial process control, water and air quality monitoring, and industrial hygiene.